

**IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
MIDLAND-ODESSA DIVISION**

RESONANT SYSTEMS, INC., d/b/a
RevelHMI,

Plaintiff,

v.

APPLE INC.,

Defendant.

Case No. 7:23-cv-00077-ADA

JURY TRIAL DEMANDED

**PLAINTIFF RESONANT SYSTEMS, INC.'S
SUR-REPLY CLAIM CONSTRUCTION BRIEF**

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I. DISPUTED CLAIM TERMS

A. “control component” terms (’767 claim 1; ’337 claim 2; ’830 claims 1, 19, 20; ’882 claims 1, 10)

1. The “control component” of ’767 claim 1 is not subject to § 112 ¶ 6

’767 claim 1 already recites sufficiently definite structure, such that there is no need to resort to the specification. The claimed control component is defined in structural terms (e.g., microprocessor, control program, memory, switch). ’767 patent at cl. 1. Apple ignores the Federal Circuit’s guidance in *Dyfan*, explaining that “§ 112 ¶ 6 is inapplicable” where a claim “recite[s] both a function and the structure for performing that function in the claim.” *Dyfan, LLC v. Target Corp.*, 28 F.4th 1360, 1365 (Fed. Cir. 2022). This is the case with claim 1 of the ’767 patent.

While Apple argues that claim 1 “lack[s] the necessary details as to *how* these generic components perform the non-generic recited function,” Apple is wrong. *See* Dkt. 82 at 2 (emphasis in original).¹ The claim provides such detail by specifying that the control component “receiv[es] output signals from sensors ... [and] adjust[s] one or more operational control outputs of the control component according to the received output signals from the sensors.” ’767 patent at cl. 1. And the claim further specifies that this process results in “subsequent operation of linear resonant vibration module produc[ing] desired outputs from the one or more sensors corresponding to one or more operational control parameters.” *Id.* This is sufficiently definite structure, in the claim itself.

Apple’s case law is unavailing. Apple first relies upon *GoDaddy* (Dkt. 82 at 2), but the claim language at issue there was markedly different. In that case, the disputed claim term at issue was the phrase “processor for associating.”² *GoDaddy.com, LLC v. RPost Commc’ns Ltd.*, No. CV-14-

¹ All emphasis in quoted material has been added unless otherwise noted.

² The full claim limitation recited “a processor for associating the content data with dispatch record data which includes at least said time related indicia and an indicia relating to the destination of

00126-PHX-JAT, 2016 WL 212676, at *52 (D. Ariz. Jan. 19, 2016), *aff'd*, 685 F. App'x 992 (Fed. Cir. 2017). Here, the disputed claim term spans 170 words and is far more detailed. For example, the *GoDaddy* claim did not include structural elements analogous to the “microprocessor,” “electronic memory,” and “switch” of the '767 patent. Simply put, the *GoDaddy* claim broadly recited a “processor for associating” certain data with one another and thus did not contain sufficient structure, whereas the disputed claim language here provides such detail and is much more specific. Apple similarly relies upon *Velocity Patent* with minimal explanation, but that case also involved an isolated dispute over a “processor subsystem” recited with minimal description, whereas the disputed claim term here itself provides sufficient structure. Dkt. 82 at 3 (citing *Velocity Pat. LLC v. Mercedes-Benz USA, LLC*, No. 13-CV-8413, 2016 WL 5234110, at *6 (N.D. Ill. Sept. 21, 2016)).

2. Apple’s proposed algorithms include extraneous steps

Apple’s proposed algorithms for all four asserted patents include extraneous steps and should therefore be rejected. Apple first argues that Resonant’s criticisms of Apple’s algorithms are unfounded. Dkt. 82 at 4-7. They are not. For example, Apple cites large swaths of the specification (often at least three columns of disclosure and three figures containing flow chart) as the corresponding algorithm for the claimed control component, but Apple’s Reply states that it is not arguing “that every aspect of the description must be shown” and that its broad citations “do[] not mean that those descriptions of the steps themselves somehow become additional algorithmic steps.” Dkt. 82 at 4. These vague representations illustrate the problem well. Apple cites three columns of specification text as “the algorithm” but vaguely states in a Reply brief this does not mean “that every aspect of the [cited] description must be shown.” But how and when will it be

the dispatch, to generate authentication data which authenticate[s] the dispatch and the contents of the dispatch.”

determined which aspects must be shown and which need not be? And how and when will it be determined which portions of the specification that Apple cites are “the steps themselves” as opposed to non-limiting “descriptions of the steps”?

Resonant submits that this is what the parties and the Court are supposed to do in the claim construction process—not kick the can and come back to the Court for constructions at a later date, and certainly not leave it to the jury to draw these lines as to what constitutes a limitation under Apple’s framing and what does not. If Apple’s algorithms are adopted as written, they undeniably—as Apple even admits—would contain not only the algorithmic steps themselves but also non-limiting “descriptions of the steps,” such that the Court or the jury would need to sort this out later. That is not a proper approach to claim construction.

To be clear, Resonant is not suggesting that it can never be proper to express a corresponding algorithm by referencing the specification, but the facts here are particularly concerning because Apple itself admits that its citations include non-limiting “descriptions of the steps.” Dkt. 82 at 4. For Apple to make that representation suggests that Apple has already drawn the lines between what it believes are “the steps themselves” and the non-limiting “descriptions of the steps.” *Id.* If that is the case, then Apple should have had no problem offering more tailored proposed algorithms that only include “the steps themselves,” rather than leaving that to be sorted out later. Apple’s assertion that “there is no legitimate reason to believe that a jury will be confused” if given Apple’s proposed algorithms is simply unreasonable. *Id.* at 5. While it would not even be legally proper to force the lay jury to sort out which portions of Apple’s multi-column, multi-figure algorithms are limiting and which are not, it would be unreasonable to expect the jury to do so efficiently and accurately during trial. Apple is represented here by a team of experienced patent attorneys and yet still has not articulated which portions of its algorithm identifications are

limiting and which are not. We should not expect a jury to do so during the course of a trial, nor does it make sense for the parties to move forward through fact discovery, expert reports, pretrial briefing, and trial without actually knowing which portions of the identified algorithms are limiting. There is a reason this Court conducts claim construction early in the case, and Apple flouts that process with its plan to delay necessary line drawing between limiting and non-limiting portions of its corresponding algorithms.

Despite *admitting* that its proposed algorithms are overly inclusive and include non-limiting “descriptions of the steps themselves,” Apple criticizes Resonant for only providing a non-exhaustive identification of extraneous language in Apple’s algorithms. Dkt. 82 at 5-6. Apple’s own acknowledgement that its algorithm recitations include non-limiting descriptions shows that Apple is missing the point. As an example of Apple’s overbreadth, Resonant pointed to the power down steps shown in Figure 7A of the ’767, ’337, and ’830 patents. *E.g.*, Dkt. 79 at 4-5, 7. In its Reply, Apple asserts that these are necessary steps because otherwise “the vibration would just continue forever.” Dkt. 82 at 6.³ There is nothing in the agreed claimed functions that requires turning vibration off, demonstrating that powering down is an extraneous step that Apple seeks to import through its overbroad algorithms. Indeed, Apple asserts that “turning the vibration off, should an appropriate input be received” is a required step of the claimed functions according to the specification. *Id.* That is wrong, as the specification excerpt cited by Apple shows. The patents explain that a change in user input calls the “control” routine, whereas a power-down event

³ Resonant stands by its prior descriptions of the meet-and-confer history, as summarized in its sworn attorney declaration (Dkt. 79-5). Apple offers no declaration refuting those facts, merely a footnote stating (inaccurately) that “Resonant *did not* identify [power down] steps as not being necessary.” Dkt. 82 at 6 n.4 (emphasis in original). In fact, Resonant did so, and Apple did not respond with any counterargument. Dkt. 79-5 ¶ 2. The first time Apple attempted to defend its inclusion of the power down steps was in Apple’s Reply brief.

is only reached when the user deactivates a power button that shuts down the whole device:

Otherwise, when the event corresponds to a change in the user input through the user interface, as determined in step 714, the routine “control” is called in step 716. Otherwise, when the event is a power-down event, as determined in step 718, resulting from deactivation of a power button by the user, then the control program appropriately powers down the device, in step 720, and the control program terminates in step 722.

E.g., ’767 patent at 6:59-66.

As further supposed justification for including power down steps in its proposed algorithms, Apple also refers to “re-initializ[ing] the stored values corresponding to strength and frequency.” Dkt. 82 at 6. But the claimed functions do not require any such “re-initializ[ing].” Apple is simply adding extraneous steps, in violation of clear precedent. *See, e.g., Univ. of Pitt. of Commonwealth Sys. of Higher Educ. v. Varian Med. Sys., Inc.*, 561 F. App’x 934, 941 (Fed. Cir. 2014) (hereinafter “*Varian*”) (“The district court properly located the disclosure of an algorithm that covered what was **necessary** to perform the claimed function ... and **nothing more** The algorithm need only include what is **necessary** to perform the claimed function.”); *Northrop Grumman Corp. v. Intel Corp.*, 325 F.3d 1346, 1352 (Fed. Cir. 2003) (“A court may not import into the claim features that are **unnecessary** to perform the claimed function. Features that do not perform the recited function do not constitute corresponding structure and **thus do not serve as claim limitations.**”); *Micro Chem., Inc. v. Great Plains Chem. Co.*, 194 F.3d 1250, 1258 (Fed. Cir. 1999) (Section 112, ¶ 6 does not “permit incorporation of structure from the written description beyond that **necessary** to perform the claimed function”).

As another example, Resonant pointed out that, for ’337 claim 2, Apple proposes that the corresponding algorithm must include the entire “monitor” routine of Figure 7B and its corresponding specification text. Dkt. 79 at 11-12. The parties agree that the claimed function requires “caus[ing] the moveable component to oscillate at a frequency and an amplitude specified

by user input” and “driving simultaneous oscillation of the movable component at two or more frequencies to generate complex vibration modes.” ’337 patent at cl. 2. Apple does not dispute that the “non-default” mode reflected in step 734 of Figure 7B encompasses the claimed complex vibration modes, but Apple nonetheless argues that the entirety of Figure 7B (and its associated description) must limit the claims because step 734 is part of Figure 7B. Dkt. 82 at 7 (“The ‘non-default’ modes of operation are *part of* the ‘monitor’ algorithm—so there is no reason why the ‘monitor’ algorithm should be excluded.”). This illustrates well the problem with Apple’s approach. Just because a necessary step for performing the claimed function appears somewhere in a flow chart (in this case, on its own branch near the very top) does not mean that every other step shown in the flow chart is necessary to performing that function. Apple further attempts to justify requiring every portion of Figure 7B by asserting that the rest of the steps shown in the flow chart are needed “to determine whether the device is operating as the user intended.” Dkt. 82 at 7. That is not the claimed function, and *only the necessary steps for performing the claimed function* constitute corresponding structure under § 112 ¶ 6.

As still other examples, Apple’s algorithm for the ’767 patent seeks to require (i) a step of a user powering on the device via a power button or other user control, and (ii) a “non-default mode” for handling “more complex operational modes,” even though neither is *necessary* to performing the claimed function. ’767 patent at 6:19-21, 7:7-22. Apple’s Reply ignores these and numerous other such examples identified in Resonant’s Responsive Brief. *See, e.g.*, Dkt. 79 at 7; *id.* at 12-13 (discussing how the specification language annotated in red and green provide only general descriptions (red) or specific examples (green) that cannot be deemed limiting but are presented as limiting in Apple’s algorithm—which Apple essentially ignores).

Because Apple’s proposed algorithms include extraneous steps—as described above and

in Resonant’s Responsive Brief (Dkt. 79 at 2-21)—Apple’s proposals should be rejected.

3. Apple wrongly criticizes Resonant’s proposed algorithms

As to the **’767 patent**, Apple asserts that Resonant’s proposal fails to include feedback and control. Dkt. 82 at 8. That is not the case. The three steps of Resonant’s proposed algorithm plainly do include feedback and control: (a) receive the value of an output signal; (b) compare that value to a different value, which could be a previous value; and (c) adjust one or more operational control outputs based on that comparison. That is a feedback loop in which the adjustment is controlled based on the feedback received, just as the specification discloses in Figures 7B and 7C. *See also* Dkt. 79-1 (Goossen Decl.) ¶ 29 (explaining how this is feedback). Resonant is not omitting necessary steps, and its Responsive Brief cites exemplary specification disclosure supporting Resonant’s articulation of the necessary steps. *See, e.g.*, Dkt. 79 at 8.

As to the **’337 patent**, Apple again wrongly asserts that Resonant’s proposal is “under-inclusive.” Dkt. 82 at 8-9. To the contrary, Resonant’s proposed algorithm steps come from the intrinsic evidence. *See* Dkt. 79 at 10-11 (describing exemplary specification support). On step (a), Apple offers no support for its assertion that the only portion of the specification that accomplishes setting the mode and strength to user selections is the “monitor” routine of Figure 7B. *See* Dkt. 82 at 8. On step (b), Resonant’s proposal closely mirrors the description of step 762 in Figure 7C (*see* ’337 patent at 8:16-20), and Apple does not identify any other portion of Figure 7C that is necessary to performing the claimed function. Dkt. 82 at 8-9. And on step (c), Apple’s only criticism is that certain words of the algorithm step overlap with the claimed function, which is natural here because that portion of the function is described in very specific terms (e.g., “simultaneous oscillation,” “two or more frequencies”). Such overlap does not show that Resonant’s algorithm is incomplete or otherwise deficient.

As to the **’830 patent**, Apple’s criticism regarding claim 20 is meritless for the same

reasons as its criticism of '337 claim 2. For '830 claims 1 and 19, Apple offers no additional criticism—only a glib remark that “not even the third step” in Resonant’s '830 claim 20 algorithm is included in its algorithm for '830 claims 1 and 19. Dkt. 82 at 9. Of course, there is good reason for that, as that omitted third step is specifically directed to the additional limitation of claim 20 (i.e., “wherein the control component drives simultaneous oscillation of the moveable component at two or more frequencies to generate complex vibration modes”). '830 patent at cl. 20.

And as to the **'882 patent**, Apple first argues that Resonant improperly omits initialization steps. Dkt. 82 at 9. A corresponding algorithm under § 112 ¶ 6 need not include every conceivable precondition for performing the claimed function. For example, the '882 claimed invention obviously requires power to operate. But this does not mean that the corresponding algorithm needs to recite “locating a power source,” even though—strictly speaking—the control component cannot perform the claimed function without a power source. By the same token, the corresponding algorithm need not include all possible setup and initialization steps that might precede the control component performing the claimed function. Apple is simply trying to add steps that have no or minimal connection to performing the claimed function. Next, Apple asserts that a “while loop” must be included in the corresponding algorithm (Dkt. 82 at 9), but the claimed function does not require multiple rounds of operation. *See also* Dkt. 79-1 (Goossen Decl.) ¶ 46 (explaining how claimed function can be performed without continuous receipt of sensor data). Finally, Apple wrongly asserts that the specification does not disclose monitoring position alone, as opposed to both position and velocity. Dkt. 82 at 9-10. To the contrary, the specification does contemplate this because the position data can be used to derive velocity data, thus not requiring direct sensing of the velocity itself. *See, e.g.*, '882 patent at 32:1-4 (“A series of captured photodiode-sensor outputs at consecutive points in time provides the information needed to accurately *compute the*

velocity of the moving mass.”); *see also id.* at 31:37-43.

4. A switch is not a necessary part of the '337 and '830 control components

Apple offers no rebuttal to Resonant’s point that Apple apparently agrees that switches are not a necessary part of the '882 control component. Dkt. 79 at 14. Thus, this issue is limited to the '337 and '830 patents. But even for those, Apple is wrong because the specification identifies the switch as not necessarily required and, in any event, not part of the control component. *See, e.g.*, '337 patent at 5:45-48 (“FIGS. 5A-B illustrate an H-bridge switch that *can* be used, in various embodiments of the current application, to change the direction of current applied to the coil.”). Moreover, Apple offers no defense of its identified specification portions seeking to add extraneous limitations (e.g., “electromechanical buttons”) and introducing confusion by referring to user interface “switches” in addition to “the H-bridge switch.” As Resonant previously explained, these facts further show that Apple’s proposals are insufficiently precise. Dkt. 79 at 14.

5. Apple admits that a microcontroller differs from a microprocessor

Apple’s argues that the disclosed microcontroller “should be treated no different than” the disclosed microprocessor. Dkt. 82 at 10. But Apple’s expert acknowledges that a microcontroller is different from a microprocessor. *E.g.*, Dkt. 75-6 ¶ 83 (microcontroller “differs, somewhat, from a general purpose computer”). Because the disclosed microcontroller is not a general-purpose computer, it does not require a corresponding algorithm. *See HTC Corp. v. IPCom GmbH & Co., KG*, 667 F.3d 1270, 1279-80 (Fed. Cir. 2012).

6. The disclosed oscillator circuit qualifies as corresponding structure for the '830 patent’s “control component”

Apple argues that the “stored values” limitation of '830 claims 1 and 19 can only be met by a microprocessor that makes use of digital values. Dkt. 82 at 11. But the claims do not require digital values or specify that the control component itself must include store the recited “stored

values.” *E.g.*, ’830 patent at cl. 1. Instead, the specification contemplates “replacing the processor or microcontroller ... with a simpler oscillator circuit with additional control circuitry.” ’830 patent at 11:57-12:19. Resonant acknowledges that the disclosed oscillator circuit would not qualify as corresponding structure for claims reciting complex vibration modes, which is why Resonant does not include an oscillator circuit in its proposed structure for ’830 claim 20 or ’337 claim 2. But ’830 claims 1 and 19 do not include any such limitation, and the disclosed oscillator circuit would be sufficient to perform the claimed function of ’830 claims 1 and 19. *See* Dkt. 79 at 18-19; Dkt. 79-1 (Goossen Decl.) ¶ 44.

B. Preambles of ’337 claim 2 and ’830 claim 20

Apple’s reply ignores that “as a general rule preamble language is not treated as limiting.” *Arctic Cat Inc. v. Gep Power Prods., Inc.*, 919 F.3d 1320, 1327 (Fed. Cir. 2019) (quoting *Aspex Eyewear, Inc. v. Marchon Eyewear, Inc.*, 672 F.3d 1335, 1347 (Fed. Cir. 2012)). Apple tries to shift the burden to Resonant merely because it agreed that preambles found in other claims and patents are limiting. This is wrong because there were specific facts applicable to those claims that do not apply to the preambles of ’337 claim 2 and ’830 claim 20. Apple does not and cannot dispute that neither of these preambles provides antecedent basis for a limitation in the claim body. Nor was either preamble used to overcome prior art during prosecution.

Apple’s reply largely focuses on meaningless factual distinctions between this case and the *Acceleration Bay* and *Arctic Cat* cases cited by Resonant. Dkt. 82 at 12. But Resonant cited those cases only for the rule—which Apple does not and cannot refute—that “a preamble is not limiting where a patentee defines a structurally complete invention in the claim body and uses the preamble only to state a purpose or intended use for the invention.” *Acceleration Bay, LLC v. Activision Blizzard Inc.*, 908 F.3d 765, 770 (Fed. Cir. 2018) (quotation marks omitted); *Arctic Cat*, 919 F.3d at 1327. The challenged preambles do not recite additional structure because each claim body

already recites a structurally complete invention. Apple offers no substantive argument to the contrary, such that the preambles should be deemed non-limiting.

C. Typographical error in '830 claim 4

Apple's Reply offers *no response* to Resonant's points regarding the intrinsic evidence. Resonant pointed out how claim 4 naturally builds upon claim 3 by adding further limitations to the "adjusts" limitation of claim 3. Dkt. 79 at 23. No response from Apple. Resonant also pointed to portions of the specification that support Resonant's proposed correction. *Id.* at 23-24 (citing '830 patent at 6:16-51, 7:42-8:19, Figs. 6, 7B). Again, no response from Apple. Nor does Apple dispute that "[a]ll intrinsic evidence either supports Resonant's conclusion (i.e., one-character typo) or is neutral on the subject." *Id.* at 24. Judicial correction is appropriate here.

Apple offers only irrational arguments about corrections being "equally plausible" when they plainly are not. Under one scenario, the patentee mistakenly *added four new phrases* into claim 4, accompanied by *four instances of the word "the"* but without any antecedent basis for the new phrases. Under a second scenario, the patentee *mistyped a single numeral* in the claim 4 preamble, inadvertently typing "of claim 1" instead of "of claim 3." Apple argues that the first scenario is "not less plausible" than the second and that the stark differences between the two are "irrelevant." Dkt. 82 at 13. This is an absurd position. The most Apple concedes is that the first scenario "requires more keystrokes" (*id.*), which is quite an understatement. While a numerical comparison of keystrokes is not dispositive, that the first scenario (corresponding to Apple's Correction 1) is clearly less plausible than the second scenario (corresponding to Resonant's correction, aka Apple's Correction 2) shows Apple is wrong.

D. Typographical error in '882 claim 17

After completely ignoring clear prosecution history on this dispute in its Opening Brief, Apple now seeks to brush it under the rug in its Reply. The file history could not be more explicit

here, as the applicant plainly stated that what became claims 17-20 were specifically written to “*depend[] from independent claim 10.*” Ex. B (’882 FH) at 6, 17, 18. Apple’s failure to even acknowledge this crystal-clear intrinsic authority in its Opening Brief speaks volumes.

With the writing on the wall, Apple now tries to pivot to a new indefiniteness argument. In its Opening Brief, Apple argued that even with Resonant’s correction, “‘the controller’ in *claim 10* would lack a proper antecedent.” Dkt. 75 at 30. Resonant responded by pointing out that “Apple has not preserved an indefiniteness challenge to claim 10.” Dkt. 79 at 26 n.11. Apple now says—for the first time in its Reply—that “‘the controller’ in *claim 17* is indefinite under Resonant’s proposed construction.” Dkt. 82 at 14 n.9. That argument was not even preserved in Apple’s Opening Brief (which would have been untimely anyway), much less in Apple’s pre-briefing disclosures. The Court need only look at the disputed claim language to confirm this. *E.g.*, Dkt. 79 at 25 (table); Dkt. 79-4 (no dispute over “controller” for ’882 claim 17). Apple cannot raise brand new (and meritless) indefiniteness arguments during briefing for terms that were never even identified for construction.

E. “the mass” (’882 patent, claims 1, 3-6, 10)

On Reply, Apple offers one sentence of substance to support its argument—and that sentence misrepresents the specification. According to Apple, specification column 11 describes “a system with multiple ‘masses.’” Dkt. 82 at 14 (citing ’882 patent at 11:15-19, Fig. 12). Apple notably does not quote the specification here, evidently because this portion of the specification repeatedly and exclusively refers to “the moving mass 1202” as a singular term. *E.g.* ’882 patent at 11:13-19 (“FIG. 12 shows a similar implementation in which the control unit and power supply are incorporated into *the moving mass 1202*. In this implementation, the relative masses of *the moving mass 1202* and remaining components of the ORM is maximized, thus maximizing the vibrational forces produced at a given level of power consumption.”). Apple attempts no other response to the points made in Resonant’s Responsive Brief. *See* Dkt. 79 at 26-28.

F. “the one or more sensors” (’767 patent, claim 1⁴); “the oscillating resonant modules (’882 patent, claim 20)

As to “the one or more sensors,” Apple does not dispute the points made by Resonant’s expert, Dr. Goossen, regarding feedback systems like those of the claimed inventions and how such systems commonly adjust only one of multiple outputs at a time. *See* Dkt. 79 at 28-29; Dkt. 82 at 14-15. Instead, Apple’s only response is that the claims are still indefinite because it is unclear which sensor “is referenced when an adjustment is purportedly needed to address only one sensor.” Dkt. 82 at 15. This misses the point because the claims do not require, for example, two specific sensors X and Y, with a requirement that an adjustment be made to address a specific one of X or Y. Apple is apparently trying to suggest a limitation to the claims that is not required.

As to “the oscillating resonant modules,” Apple wrongly declares victory by stating that “Resonant does not address this issue.” Dkt. 82 at 15. That is wrong. Apple points to page 26 of its Opening Brief as supposedly containing this unaddressed argument. The first section on that page refers to ’882 claims 17, 19, and 20 allegedly lacking general antecedent basis, which Resonant addressed with respect to the typographical error in ’882 claim 17 (as it does here). *See* Dkt. 79 at 25-26. The second section on that page alleges that claim 10 is indefinite because it recites “the mass” twice, which Resonant addressed in that separate section (as it does here). *See id.* at 26-28.⁵ Resonant’s Responsive Brief includes a 157-word paragraph on this issue that also

⁴ Apple’s Opening Brief did not raise this “one or more sensors” dispute with respect to ’830 claim 4. *See* Dkt. 75 at 27 (referring only to ’767 claim 1). Apple should not be permitted on Reply to extend its ’767 claim 1 argument to ’830 claim 4, though it would fail for the same reasons. As in its Responsive Brief, Resonant addresses the general antecedent basis argument regarding “the one or more sensors” of ’830 claim 4 above as to the typographical error in ’830 claim 4.

⁵ Apple’s Opening Brief did not raise this “one or more [ORMs]” dispute with respect to ’882 claims 10, 17, or 19. *See* Dkt. 75 at 27 (referring only to ’882 claim 20). Apple should not be permitted on Reply to extend its prior claim 20 argument to claims 10, 17, and 19—not that the argument would be any more persuasive for those claims even if it were preserved.

references Dr. Goossen’s expert testimony addressing it. *See* Dkt. 79 at 28-29 (citing Goossen Decl. ¶ 67). Contrary to Apple’s assertion, it is *Apple* who offered no response to *Resonant’s* arguments—not the other way around.

G. “desired outputs” (’767 patent, claim 1; ’830 patent, claim 4)

Apple begins by mischaracterizing the record on this dispute. In its Opening Brief, Apple repeatedly asserted that “desired outputs” is “a subjective term” (Dkt. 75 at 28), which Resonant explicitly refuted. *See* Dkt. 79 at 29 (“The term ‘desired outputs’ is not a subjective term because ...”). Now in Reply, Apple declares that “Resonant does not dispute that ‘desired outputs’ is a term of degree.” Dkt. 82 at 15. If not a plain lie, that statement is at least highly misleading because Apple’s Opening Brief never states that “desired outputs” is a “term of degree” and only uses that phrase in quoting from a case to support its assertion that “desired outputs” is “a subjective term”—which Resonant explicitly refuted. Apple also bizarrely asserts that “Resonant does not dispute” a statement of law from the *Geoscope* case but neglects to mention that Apple never cited this case or proposition until its Reply, making it impossible for Resonant to have previously disputed.

Apple goes on to dismiss the exemplary specification excerpts Resonant identified as irrelevant because they refer to vibrations of desired amplitude and frequency. Dkt. 82 at 15. Apple is feigning ignorance, as the purpose of the claimed sensors is to feed output signals back to the control component. The claimed inventions produce vibrations of desired amplitude and frequency using such sensor feedback. The specification further describes these relationships. *E.g.*, ’767 patent at 6:11-14 (“**Sensors** may include one or more of accelerometers, piezoelectric devices, pressure-sensing devices, or other types of sensors that can *generate signals corresponding to the strength of desired vibrational forces.*”); *see also id.* at Figs. 8, 9 (depicting exemplary desired amplitudes and frequencies corresponding to desired outputs of feedback sensors).

Apple’s attempt to distinguish *Revolaze* is unavailing. Contrary to Apple’s arguments, the

specifications contain examples of desired outputs, including the above examples and those referenced in Resonant’s Responsive Brief. *See* Dkt. 79 at 29-30. Apple is also wrong to suggest that there is no guidance for how to produce such desired outputs, given each claim’s recitation of the moveable component, driving component, control component, and sensors, along with the descriptions of those in the specification of each patents. As in *Revolaze*, the term “desired outputs” is not indefinite here because “whether a particular design or feature is ‘desired’ or ‘undesired’ is a function of the specified design, not the vagaries of any person’s opinion.” *RevoLaze LLC v. J.C. Penney Co.*, No. 2:19-cv-00043-JRG, 2020 WL 697891, at *11 (E.D. Tex. 2020).

II. CONCLUSION

For the foregoing reasons and those in Dkt. 79, Resonant’s proposals should be adopted.

Date: May 9, 2024

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CERTIFICATE OF SERVICE

I hereby certify that counsel of record who are deemed to have consented to electronic service are being served on May 9, 2024, with a copy of this document via the Court's CM/ECF.

/s/ Reza Mirzaie
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